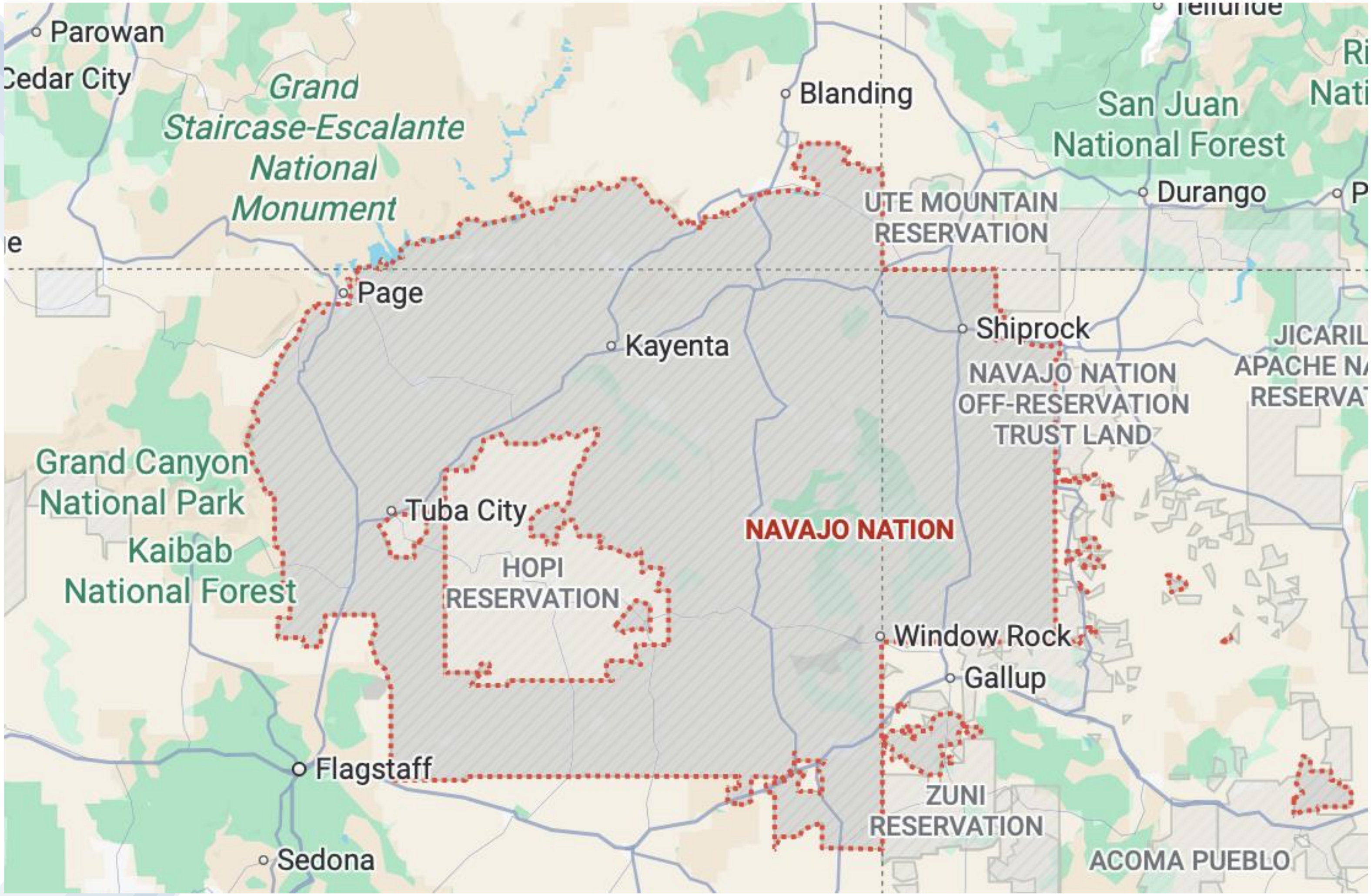
Navajo Technical University

Dr. Sundaram Arumugam

Associate professor

Electrical Engineering

Navajo Nation



Energy availability is a significant challenge in the Navajo Nation

Approximately 13,000-14,000 house lacking electricity

- vast geographical distances
- Poverty
- high connection costs

Residents often rely on alternative power sources like

- kerosene
- diesel generators
- solar panels

Solar panels - Navajo nation

Solar panels for Navajo Nation houses are sponsored by a combination.

- Federal, state, and private entities, including
- U.S. Department of Energy (DOE)
- U.S. Department of Agriculture (USDA),
- Private companies like Qcells and Navajo Transitional Energy Company (NTEC), and non-profit organizations such as Native Renewables.
- These sponsors provide grants, equipment donations, and funding for installation to electrify homes.

Navajo Technical University

- Certificate Programs
- Associate programs
- Bachelor Degree Programs
- Masters Degree Programs
- PhD Program

NTU Electrical Engineering

B.S.EE – ABET Accredited program

M.S.EE – HLC Approved

PhD – Yet to Start

Navajo Technical University

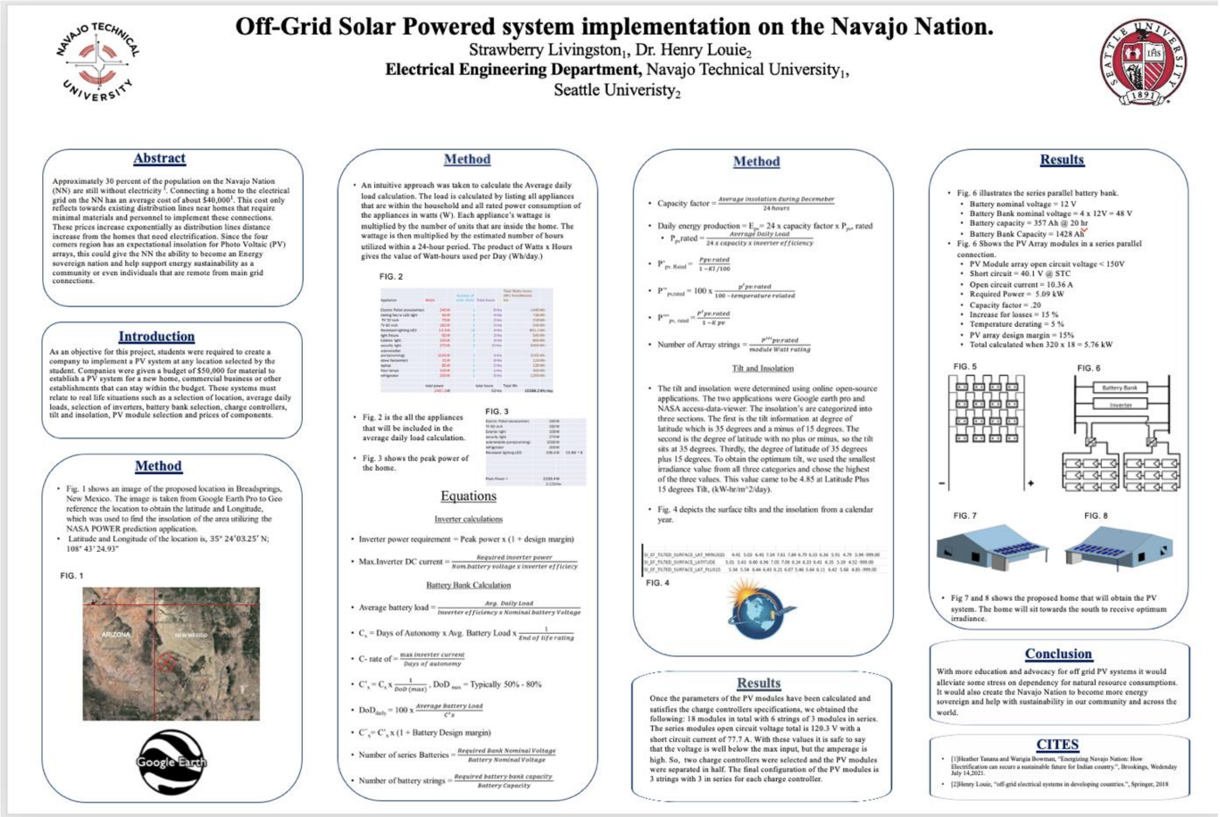
- **Construction of Gazebo at NTU campus with Solar Panels**

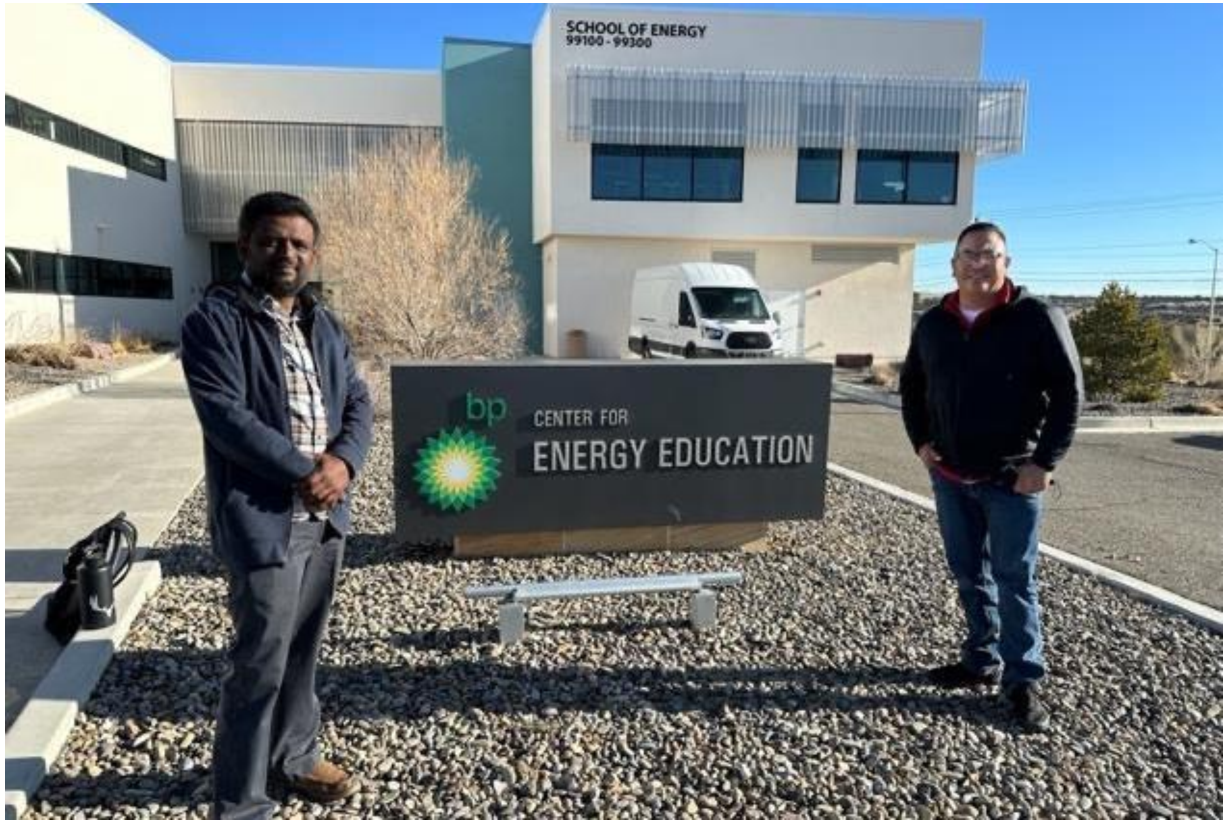
A Study on a Solar Panel installation and Operation as a part of curriculum at a Navajo Nation House.

U.S. Department of Energy’s Solar Decathlon Competion

- Electrical student Edwina Lesli Presented the design paper in the completion
- Martin Keller, The director of National Renewable Energy laboratory and With David M.Turk Deputy Secretary of the US Department of Energy.

“ Off-Grid Solar Powered system implementation on the Navajo Nation”





Minority Serving Institution Partnership Program (MSIPP) – Annual Meeting

“Radiation Detection on Abandon Uranium Mines on the Navajo Nation”

Tribal Colleges and University Program Research Symposium

- The students presented posters on various research topics.
- This symposium - growth of STEM and research.

NTEC Navajo Mines A3 Farmington, NM

- Navajo Tech Students vist NTEC Navajo Mines A3 Farmington, NM
- opportunity to interact with industry experts.
- understand energy management

Navajo Nation, Energy Summit 2024

Energy Generation: Topics

- Oil and Gas
- Hydrogen
- The Importance of the Grid & Transmission, Energy Education Opportunities

50th IECON (Institute of Electrical and Electronics Engineers) conference – IEEE conference

- **“Improving Indoor Air Quality Using a Box Fan Filter in for Navajo Nation Home - Healthy Hooghan Project”**
-

10th Annual Tribal College Research Symposium was conducted at Bismark.

AIHC The American Indian Higher Education Consortium (AIHEC)

The conference featured a range of workshops, presentations, and networking opportunities, focusing on various topics

ENERGIZED WATERSHED PANEL

GOAL: By 2035, the Energized Watershed Engine is a ***national*** and ***global commercial hub*** for water security and energy technologies — accelerating market-ready innovations through deep collaboration among industry partners, regional R&D institutions, Tribes, community members across the region, and investors.

GOVENOR'S 50-YEAR WATER ACITON PLAN

Water conservation
- A1 Public education campaign
- A2 Agricultural water conservation
- A3 Municipal conservation
- A4 Water storage and delivery

New Water Supplies
- B1 Desalination and water treatment
- B2 Expand potable and non-potable water reuse
- B3 Groundwater mapping and monitoring

Water and Watershed Protection
- C1 Clean-up contaminated groundwater sites
- C2 Control discharge through permitting
- C3 Modernize wastewater treatment plants
- C4 Protect and restore watersheds

Source: www.nm.gov/wp-content/uploads/2024/01/New-Mexico-50-Year-WaterAction-Plan.pdf

Panel Members

David Hanson

Stephen Gomez

Alex Mayer

Ken Armijo

Sundaram Arumugam

Kurt Solander

Navajo Technical University - Students

Explores Sustainable Agriculture and Indigenous Culture in Rio Grande Community Farm, Albuquerque

NTU Garden Farming

Hands-on Agrivoltaic Microgrid Solar Panel Characterization Workshop at UNM Campus. Albuquerque

- Gain practical, hands-on experience in renewable energy systems through our immersive Agrivoltaic
- Microgrid Solar Panel Characterization training.

Summer STEM skill program is conducted every year for the school students and they were trained to handle the tools and use the equipment’s in a safe manner.

Navajo Tech - **N**ew Mexico Tech - **N**avajo **N**ation **W**ater **P**urification **P**roject

Thank you